



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,112	01/07/2004	David P. Platt	D/A3519 XERZ 2 00677	5219
27885	7590	03/14/2006	EXAMINER	
FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			VO, ANH T N	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/753,112

Applicant(s)

PLATT ET AL.

Examiner

Anh T.N. Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-20 is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-16 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

CLAIM REJECTIONS

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 8 is rejected under 35 USC 102 (a) as being anticipated by Takami et al. (JP Pat. 404187448).

Takami et al discloses in Figures 1-4 an ink cartridge for an ink for an ink jet printer comprising:

- a first passage (5) in communication with an ink source (1);
- a surface having an orifice (101) for delivering ink to an associated print media and/or drum (105, 107), wherein the orifice (101) communicates with the first passage (5);
- a second passage (4) in communication with the first passage (5) and an associated pressure source (atmosphere pressure source); and
- a valve member (7) disposed in the first passage (5) upstream from the second passage (4), wherein the valve member (7) is adapted to move between an open position and a closed position, when in the open position the valve (7) allows ink to travel towards the orifice (101)

Art Unit: 2861

and when in the closed position the valve inhibits ink from traveling towards the ink source (1) (Figures 1-4, see Constitution).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 are rejected under 35 USC 103 (a) as being unpatentable over Tsuzuki et al. (US Pat. 4,882,596) in view of Perevozchikov (US Pat. 6,139,291) and further in view of Takami et al. (JP Pat. 404187448).

Tsuzuki et al. discloses in Figures 1 and 3A-3C an ink jet print head comprising:

- a first passage (4) in communication with an ink source (8);
- a surface having an orifice (1) for delivering ink to an associated print media and/or drum (not shown), wherein the orifice (1) communicates with the first passage (4);
- a valve member (5 or 13, 15) disposed in the first passage (4) upstream from the second passage (6), wherein the valve member (5 or 13, 15) is adapted to move between an open position and a closed position, when in the open position the valve (5 or 13, 15) allows ink to travel towards the orifice (1) and when in the closed position the valve inhibits ink from traveling towards the ink source (8) (Figures 1 and 3A-3C, column 3, lines 38-47);
- wherein the valve member (5 or 13, 15) comprises a substantially vertically disposed plate (Figures 1 and 3A-3C); and
- a printer including the print head.

However, Tsuzuki et al. do not disclose a valve seat and a valve stop that is positioned downstream from the valve seat, wherein the valve member seats on the valve seat when in the closed position and the valve member abuts the valve stop when in the open position; the valve plate is positioned between the valve seat and the valve stop such that the entire valve plate can move laterally between the valve seat and the valve stop; the valve seat is recessed in a bore that defines a ledge upon which the valve plate rests; wherein the valve stop includes a contact surface downstream from and at an acute angle to the valve seat; wherein the contact surface of the valve stop defines at least one depression into which ink flows; wherein the acute angle is about 5 degrees; a relief passage defined along the passage adjacent the valve member, wherein the relief passage reduces the resistance of flow of ink around the valve member when in the open position; and wherein the relief passage is positioned above the valve member; and a second passage in communication with the first passage and an associated pressure source.

Nevertheless, Perevozchikov discloses in Figures 4A-4B and 5 a discharge valve (130) comprising:

- a valve seat (132) and a valve stop (136) positioned downstream from the valve seat (132), wherein the valve member (134) seats on the valve seat (132) when in the closed position and the valve member (134) abuts the valve stop (134) when in the open position (Figures 4A-4B, column 5, lines 55-57 and column 6, lines 47-49);
- the valve plate (134) is positioned between the valve seat (132) and the valve stop (136) such that the entire valve plate (132) can move laterally between the valve seat (132) and the valve stop (136);
- the valve seat (132) is recessed in a bore (78) that defines a ledge upon which the valve plate (132) rests (Figures 4A-4B, column 6, lines 9-15);
- wherein the valve stop (136) includes a contact surface downstream from and at an acute angle to the valve seat (132) (Figures 4A-4B);
- wherein the contact surface (172) of the valve stop (134) defines at least one depression into which ink flows (Figures 4A-4B);

Art Unit: 2861

- wherein the acute angle is about 5 degrees (Figure 4B);
- a relief passage (148) defined along the passage (140) adjacent the valve member (134), wherein the relief passage (148) reduces the resistance of flow of ink around the valve member (134) when in the open position (Figure 4A); and
- wherein the relief passage (148) is positioned above the valve member (134) (Figure 4A).

Furthermore, Takami et al discloses in Figures 1-4 an ink cartridge for ink for an ink jet printer comprising a second passage (4) in communication with the first passage (5) and an associated pressure source (atmosphere pressure source).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Perevozchikov and Takami et al. the Tsuzuki et al. ink jet print head for the purpose of controlling a movement of a valve plate and keeping a desired pressure to stabilize an ink supply to the print head.

Tsuzuki et al. in view of Perevozchikov and further in view of Takami et al. disclose the claimed invention except "a valve moat adjacent an outer periphery of the valve seat". It is seen as a mechanical design expedient for an engineer having ordinary skill in the art and depending upon a particular environment and the applications in which the valve and the ink jet print head to be used in the ink jet printer for the purpose of freely moving a valve plate in a limited space.

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These prior art references (US Pat. 4,103,686; US Pat. 4,727,378; US Pat. 6,592,346) cited in the PTO 892 form show a valve assembly and an ink jet head that is deemed to be relevant to the present invention. These references should be reviewed.


Allowable Subject Matter

Claim 12 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses a print head for a printing apparatus that uses liquid ink comprising a contact surface that defines at least one depression to expose a portion of a valve member to pressure from an associated pressure source when the valve member is in a closed position in the combination as claimed.

Claims 18-20 are allowable. These claims would be allowable because none of the prior art references of record shows or suggests a print head for a printing apparatus that uses liquid ink comprising a valve that is disposed in a passage, wherein the valve opens in response to pressure applied by ink stored in an ink bucket and closes in response to pressure applied by a pressure applying means in the combination as claimed.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M. to 7:00 P.M..
The fax number of this Group 2861 is (571) 273-8300.


ANH T. N. VO
PRIMARY EXAMINER
March 8, 2006